

Massachusetts Avenue Bridge
(Charles C. Glover Bridge)
Spanning Rock Creek and Potomac Parkway
Washington
District of Columbia

HAER No. DC-22

HAER
DC
WASH,
588-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U.S. Department of the Interior
Washington, DC 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD
MASSACHUSETTS AVENUE BRIDGE
(Charles C. Glover Bridge)
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Location: Massachusetts Avenue Bridge crosses Rock Creek valley in northwest Washington, D.C. Rock Creek and the Rock Creek and Potomac Parkway roadway pass underneath its single, lofty span.

Date of Construction: 1939-41.

Designer and Builder: Engineers, Harrington & Cortelyou of Kansas City, Missouri; architect Louis Justement, Washington, D.C.; built by Potts and Callahan Company of Baltimore, Maryland.

Present Owner: Department of Public Works, District of Columbia.

Present Use: Vehicular and pedestrian bridge.

Significance: This bridge, on axis with Massachusetts Avenue, replaced an earth-fill crossing that had been constructed in 1901; it was breached by a culvert through which a narrow two-lane road later passed. That viaduct constricted the traffic flow of the Rock Creek and Potomac Parkway and obstructed the open-valley landscape. The design of the new bridge allowed the parkway to pass underneath its large arch, and it harmonized with the pre-existing bridges over Rock Creek. The same team of designers was responsible for this bridge as for the contemporary K Street Bridge.

Project Information: The documentation of Rock Creek and Potomac Parkway was undertaken as a two-year pilot project to help establish standards and guidelines for recording the structures and landscape features of park roads and parkways. This project was a joint effort of the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER), a combined division of the National Park Service. The project was sponsored by the Park Roads Program of the National Park Service, John Gingles, deputy chief, Safety Services Division. The project supervisor was Sara Amy Leach, HABS historian.

The Washington-based summer 1992 documentation team was headed by landscape architect Robert Harvey (Iowa State University-Department of Landscape Architecture) who served as field supervisor; the landscape architects were Deborah Warshaw (University of Virginia) and Dorota Pape-Siliwonczuk (US/ICOMOS-Poland, Board of Historical Palaces and Gardens Restoration); the architects were Evan Miller (University of Colorado-Boulder), Steven Nose (University of Maryland), and Tony Arcaro (Catholic University). The historians were Tim Davis (University of Texas) and Amy Ross (University of Virginia). Jack E. Boucher made the large-format photographs; Air Survey Corporation of Sterling, Virginia, produced the aerial photography and digital mapping from which the site-plan delineations were made.

History of the Crossing

Sponsored by developers of the northwest suburbs, the original Massachusetts Avenue crossing (1901) represented an extension of the existing street pattern of the city across Rock Creek valley. Prior to 1901 this area was served by a steel bridge, which spanned Rock Creek about 200 yards upstream from Massachusetts Avenue. This bridge--on axis with Normanstone Drive--was 370' long, 17' wide, and stood 45' above the creek bed. According to historian Zack Spratt, this 1888 structure was known as Thompson Bridge; it had been erected by realtor John W. Thompson, developer of the area directly to the west.¹

In 1897, two designs for a high-level bridge at Massachusetts Avenue were prepared by the Army Corps of Engineers. One was a three-arch, stone structure; the other a steel arch. These designs were submitted to Brig. Gen. John M. Wilson, Chief of Engineers, U.S. Army, by Capt. D. D. Gaillard of the Army Corps of Engineers on June 17, 1897.²

On October 30, 1897, Gaillard wrote to Wilson that the Melan Arch Construction Company of New York had expressed interest in submitting plans for the proposed bridge. He recommended they be allowed to do so. Gaillard praised the method:

The Melan arch is a combination of concrete with concealed arched-iron-ribs, presenting the appearance of a stone bridge and being generally intermediate in cost between steel and the ordinary stone arches. As it is a type of construction which appears to be coming into very general use, and as the appropriation for the purpose will be ample, I would respectfully recommend that if the wording of the act permits, I may be authorized to employ the Melan Arch Construction Company to prepare plans for the proposed bridge over Rock Creek on the line of Massachusetts avenue extended, at a total cost not to exceed \$300, to be paid from the appropriation 'Bridges, D.C., 1898,' for plans for bridge over Rock Creek.³

Wilson replied that the District Commissioners could not spend money on this type of bridge because the appropriation had specified two particular design types, stone and steel arch.⁴

A few years later, three Melan-arch bridges were erected across Rock Creek some distance upstream. These, however--Boulder, Pebble Dash, and Old Harvard Street bridges--all stand at a considerably lower level than was required for the span at Massachusetts Avenue.

Gaillard submitted a report on the two approved types of bridges on December 17, 1897. He estimated that the stone-arch version would cost \$568,545, and the steel bridge \$199,204. His figures were based on a bridge 80' in clear width and a little more than 500' long. At this time, Gaillard commented on the significance of this Massachusetts Avenue crossing:

With the exception of Pennsylvania avenue it is the only [avenue] traversing the entire city from southeast to northwest, and it should be remembered that travel on Pennsylvania Avenue between Georgetown and Washington is very seriously throttled by the bridge over Rock

¹ Zack Spratt, "Rock Creek's Bridges," Records of the Columbia Historical Society 53-56 (1959): 124.

² Capt. D. D. Gaillard, Corps of Engineers, to Brig. Gen. John M. Wilson, 17 June 1897. RG77.

³ Capt. D. D. Gaillard, Corps of Engineers, to Brig. Gen. John M. Wilson, 30 October 1897. RG77.

⁴ Brig. Gen. John M. Wilson, to Capt. D. D. Gaillard, Corps of Engineers, 3 November 1897. RG77.

Creek which has a clear width of roadway of but 17', while the width of the roadway of the avenue in the immediate vicinity is over 53'.⁵

He emphasized the urgency of his proposal:

This avenue is at present terminated on the northwest very abruptly by Rock Creek, which interposes itself as a deep ravine, the bottom of which lies nearly 90' below the proposed grade of the avenue. Across this ravine in the vicinity of Massachusetts Avenue there exists at present no bridge except a slight, comparatively inexpensive structure [Thompson Bridge] built by private parties several years ago. The nearest bridge above the one proposed (with the exception just noted) is distant half a mile in a straight line, while the nearest one below the proposed site is seven-tenths of a mile. As a consequence a large and attractive suburban section lying in the vicinity of the New Naval Observatory is at present cut off from direct connection with the heart of the city.⁶

In March 1898, Henry Rust, engineer for Schenby Parks of Pittsburgh, wrote to Wilson asking whether a design for a culvert had been accepted or whether he might submit a plan. Rust stated that he had designed similar crossings for parks in the city of Pittsburgh.⁷ The response to Rust's inquiry has not been located.

An 1898 congressional report found that owing to the grade level at the site of the proposed bridge, the location was ill-suited for an economical, low-level stone arch. The Army Corps of Engineers then proceeded with the alternative design for a steel bridge with stone foundations. This structure would have a 250' main arch flanked symmetrically by half-arches, each 125' long. Gaillard prepared eight sheets of drawings illustrating the steel bridge. He recommended this material as best suited to a large span and appropriate for a bridge that would serve one of the city's main avenues. Although at the time there were no buildings in this part of the city, Gaillard wrote that he expected there would soon be, and that a bridge in harmony with the existing rural setting would soon be out of place on this important road.⁸

In May 1899, Lieut. Col. A. M. Miller, Corps of Engineers, wrote to Wilson that an alternative scheme had been adopted. Miller stated: "From an examination of the plans proposed it does not appear that the proposed structure will affect injuriously the aqueduct tunnel and its accessory works at and near the crossing of Rock Creek. The bridge is simply an earthen viaduct crossing the valley of Rock Creek, provided with a culvert for the passage of the water of Rock Creek beneath it." He drew a parallel between this fill and that proposal of Maj. James L. Lusk, which suggested converting Rock Creek into a closed sewer.⁹ Two months later, the Corps of Engineers stated that they no longer intended to build this bridge, but that it would likely be

⁵ Capt. D. D. Gaillard, Corps of Engineers to Brig. Gen. John M. Wilson, 17 December 1897. RG77.

⁶ Gaillard to Wilson (December 1897).

⁷ Henry Rust, Engineer, Schenby Parks, Pittsburgh to Brig. Gen. John M. Wilson, 15 March 1898. RG77.

⁸ Report of Capt. D. D. Gaillard, within Bridge Across Rock Creek on the Line of Massachusetts Avenue Extended (55th Cong., 2nd sess., 1898, H. Doc. 163). (Serial Set 3667).

⁹ A. M. Miller, Lieut. Col., Corps of Engineers to Brig. Gen. Wilson, Chief of Engineers, U. S. Army, 16 May 1899. RG77.

constructed under the direction of the commissioners of the District of Columbia.¹⁰

Finally built in 1901, the Massachusetts Avenue crossing consisted of a low-level arch with a 50' span, extending through earthen fill 224' long and 53' high. The causeway atop the earthen fill carried Massachusetts Avenue across the gorge. The culvert had a granite facing, and its barrel vault crossed only the creek. The project cost \$111,750.

In the 1890s, a plan to fill in the Rock Creek gorge to the level of adjacent streets had been contemplated. In 1893, Capt. William T. Rossell, District engineer commissioner, reported on the advantages and disadvantages of filling in the valley.¹¹ Building the viaduct on axis with Massachusetts Avenue, beneath which Rock Creek flowed through a tunnel, was a step toward this. The proposed fill would have continued to Pennsylvania Avenue, and enclosed Rock Creek within a covered sewer.¹² This closed-conduit scheme was finally rejected in 1908 after Maj. Jay J. Morrow and Capt. E. M. Markham evaluated the options, and concluded in favor of preservation of the valley.¹³

Lieut. Col. Clarence O. Sherrill, executive officer of the parkway commission from 1921-25, devised a plan to promote a high-level bridge. In his scheme, the parkway commission would build a road through the culvert, which would flood when the creek was high. Then the necessity for a higher arch would be realized. The 50' culvert permitted only a narrow roadway beneath, which was built in 1925. This road not only flooded, but also had a dangerous blind curve as it passed through this tunnel. Sherrill's strategy succeeded, but not until many years later.¹⁴

After the open-valley treatment of the area was adopted, and a roadway passing along the valley floor constructed, the earth fill along Massachusetts Avenue was regarded as an obstacle to ideal parkway development. A March 1939 article in the Evening Star called the culvert "uninspiring from the street level, and ugly from the roadway in the park." It noted that the earth fill acts as a dam, and suggested that a high-level, single-arch stone bridge be built to alleviate this bottleneck, and allow for the continuation of the four-lane Rock Creek and Potomac Parkway.¹⁵

History of the Design

Construction of the parkway, completed in 1936, brought about a need for new highway bridges to replace old spans over the creek in order to provide sufficient vertical and horizontal clearance for vehicles travelling this route. Original bridges had also become obsolete in their function of carrying cross-valley traffic, with the increased volume and load that was a result of the expanded population northwest of the city. The Commission of Fine Arts (CFA), established in 1910 to advise the government on artistic matters, led the call for bridges erected in Rock Creek valley to

¹⁰ Corps of Engineers to Jason F. Stearns, engineer, 18 July 1899. RG77.

¹¹ Tim Davis, Rock Creek and Potomac Parkway: Context, History to Completion, Description (Unpublished manuscript, HABS/HAER Summer 1991), 65.

¹² Frank B. Scheetz, "Chapter VI: Bridges," Planning and Building the City of Washington, ed. by Frederick Haynes Newell (Washington, D.C.: Ransdell Inc., 1932), 121.

¹³ Davis, 79.

¹⁴ Barry Mackintosh, Rock Creek Park: An Administrative History (Washington, D.C.: National Park Service, 1985), 61.

¹⁵ "Bottlenecks," Evening Star, 22 March 1939.

be of an architectural character befitting the park setting. The Connecticut Avenue Bridge (1897-1907), which had set a high standard for aesthetic quality, was cited as the model for parkway bridge design.¹⁶

In February 1939, District Commissioners decided to construct an open-arch bridge to accommodate the four-lane parkway rather than dig a new tunnel through the existing earth fill.¹⁷ On April 26, 1939, CFA Chairman Gilmore D. Clarke wrote Capt. Herbert C. Whitehurst that the sketch of the design he had submitted had been considered at their last meeting. He suggested that improvements be made in the design, which he described as "an affectation of medieval architecture." In particular, the commission felt the design should be studied in relation to the parkway to ensure that the arch did not restrict the parkway in any way.¹⁸

Whitehurst, in his response to Clarke, included a photostat of the new rendering for his inspection, noting that he believed objectionable features of the design had been removed. The design was worked out by Washington architect Louis Justement (1891-1968) and the Kansas City engineering firm Harrington & Cortelyou. Whitehurst recommended the use of concrete mixed with rubble stone for the structure with granite facing, as this type of stone was used so generally in Rock Creek Park. He hoped to obtain permission to proceed with the working drawings at the earliest possible date.¹⁹

Shortly thereafter, Whitehurst received CFA approval for the design. The CFA found the full-centered circular arch--with its radius of 75'--the retaining walls, and the length and treatment of the wingwalls to be satisfactory. The commission was still concerned about some of the details of the design, however, and advised: "It would be most desirable to have the members of the commission discuss with you at the next meeting on September 15 the architectural details, involving such matters as size of voussoir or arch-ring stones, the details of the parapet and coping, the treatment of the soffit of the arch, which will be prominent as viewed from Rock Creek Parkway, scale of stones in the masonry, their color, texture, pointing, etc."²⁰ The plans for the new bridge were reviewed by the District Commissioners, National Capital Parks & Planning Commission (NCP&PC), CFA, and National Park Service. The project was supervised by engineer Whitehurst of the D.C. highway division.

History of Construction

The District Appropriation Act for fiscal year 1939 included \$360,000 for this project. In addition to providing for the construction of the bridge on axis with Massachusetts Avenue, the act included funding for the reconstruction and relocation of parkway roads and walkways.²¹ Two 24' roadways would pass beneath the new span, a tremendous improvement over the horizontal clearance

¹⁶ Col. William Harts, Memo extracting from the Annual Report of the Commissioners of the District of Columbia, 5 January 1916. RG66.

¹⁷ "New Bridge Proposed for Rock Creek Traffic Bottle Neck," Evening Star, 10 February 1939.

¹⁸ Gilmore D. Clarke, Chairman of the Commission of Fine Arts, to Capt. Herbert C. Whitehurst, 26 April 1939. RG66.

¹⁹ Capt. Herbert C. Whitehurst to Gilmore D. Clarke, Chairman of the Commission of Fine Arts, 18 August 1939. RG66.

²⁰ Commission of Fine Arts to Capt. Herbert C. Whitehurst, 28 August 1939. RG66.

²¹ "Massachusetts Avenue Bridge Ending 'Bottleneck' Planned," Evening Star, 19 March 1939.

of the culvert.

Work on the Massachusetts Avenue Bridge began on February 5, 1940. Potts and Callahan Company won the construction contract with a bid of \$478,487.50. An appropriation of \$550,000 had been made available. The contract stated that work had to be completed within 350 days. During construction, a temporary three-lane bridge carried two lanes of traffic eastbound in the morning and two lanes westbound in the afternoon.²²

In April 1940, the NCP&PC reached an agreement with the District government on landscape work connected with four major construction projects, each intimately related to parkway improvements under the jurisdiction of this office and at present was being carried out by city commissioners. Under the new arrangement, the NCP&PC and the District would share the financial burden. NCP&PC allocated \$24,751 for landscape work in the sections of the Rock Creek and Potomac Parkway associated with construction of the new Massachusetts Avenue Bridge. These funds also supported the extension of the parkway under the new span, and drainage and necessary retaining walls in connection with the relocation of the stream channel.²³

On March 22, 1941, the Times-Herald reported that one side of the new bridge would be opened to traffic within weeks. The span had been slated for completion January 20, but three extensions had been given without penalty due to bad weather and the shortage of labor--a result of striking workers.²⁴

In accordance with a provision in the contract requiring that traffic through the existing tunnel be maintained during construction, this thoroughfare remained intact until the bridge was completed. On April 18, 1941, Newton B. Drury noted that the south side of Massachusetts Avenue, including the bridge, was paved and open for public use.²⁵ The dynamiting of the old tunnel was pictured in the Evening Star of August 11, 1941. Afterward, a new and wider roadway was constructed beneath the bridge. The total cost of the project was \$506,853.²⁶

Ceremonies were held April 24, 1949, to rededicate the Massachusetts Avenue Bridge as the "Charles C. Glover Bridge," since for many years the area resident had advocated enlargement of the city's park system.²⁷

Description

The bridge's overall length is 420' with a single-arch spanning 150'; it is 104' high and 75' wide. The vertical highway clearance is 40', asphalt roadway width is 50', and concrete sidewalks are 10' wide. On each side of the bridge at both termini there are large curved planters for which

²² "New Massachusetts Avenue Bridge Started," Evening Star, 1 March 1940.

²³ F. F. Gillen, Acting Superintendent, National Capital Parks, Memo re "Roads and Trails Program, 1941," 26 April 1940. RG328.

²⁴ "New \$500,000 Massachusetts Ave. Bridge Nears Completion," Times-Herald, 22 March 1941.

²⁵ Newton B. Drury, Memo to the Secretary of the National Park Service, 18 April 1941. RG328.

²⁶ Department of Highways, Washington, D.C., A Pictorial Report on Highway Bridges and Structures in the District of Columbia (Washington, D.C.: Department of Highways, 1948), 41-42.

²⁷ "Ceremonies Renaming Span as Glover Bridge Set for Wednesday," Evening Star, 24 April 1949.

planting plans were executed.²⁸

The east and west abutments are concrete.²⁹ The facade is a rough, ashlar facing of multi-colored gneiss. The only details on this bridge are its smooth arch ring, simple parapet, and tubular-steel safety railing. The treatment of the facade is identical to that of K Street Bridge (HAER No. DC-20), which is its contemporary, executed by the same team of designers. However, the Massachusetts Avenue Bridge's large arch is less of an obstacle to the valley than is the massive K Street Bridge, with its series of small openings and extensive wall surface.

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Summer 1992

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²⁸ Department of Highways, 41-42.

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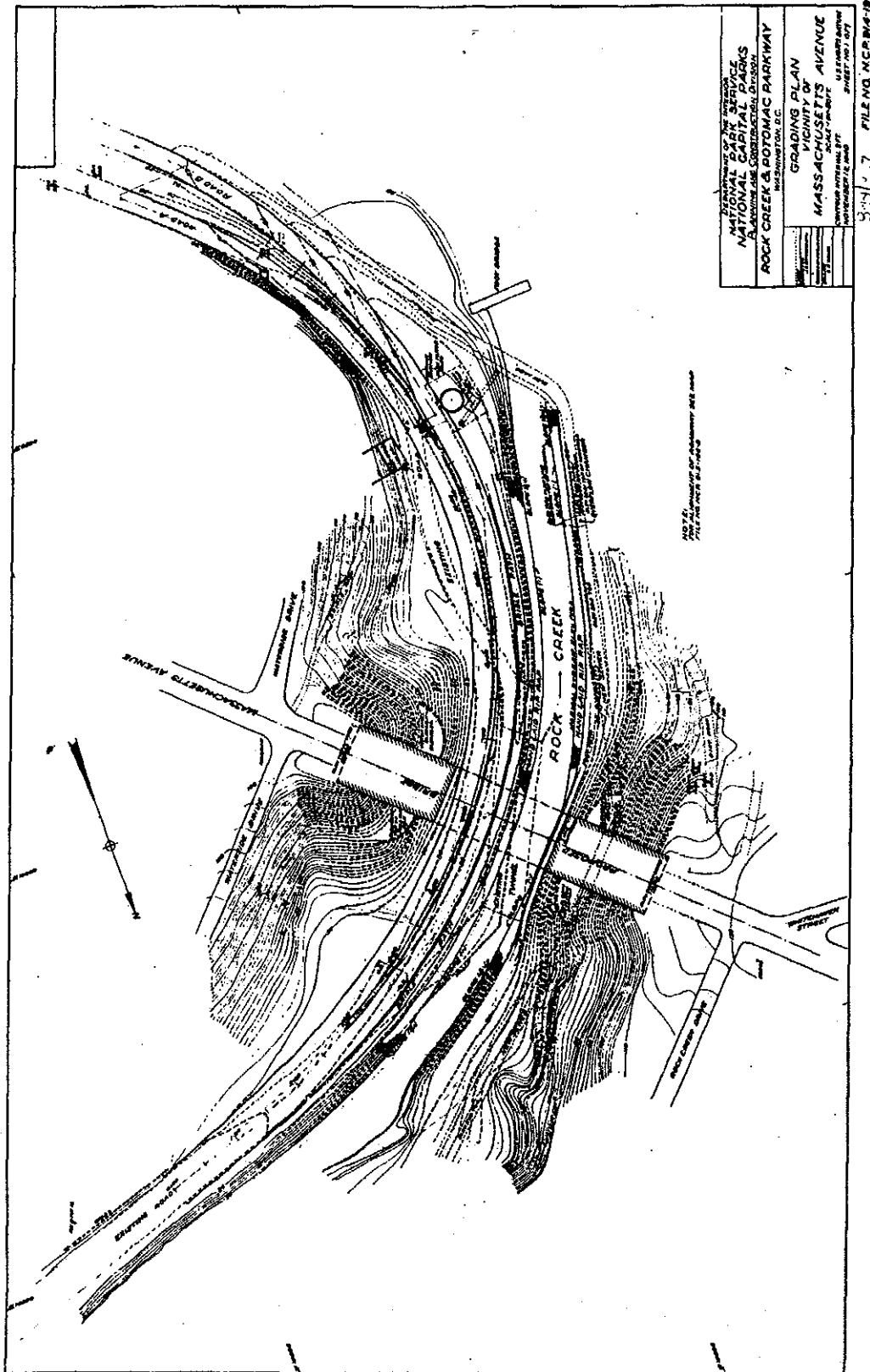
**MASSACHUSETTS AVENUE BRIDGE
OVER ROCK CREEK AND POTOMAC PARKWAY
AT
WASHINGTON, D.C.**

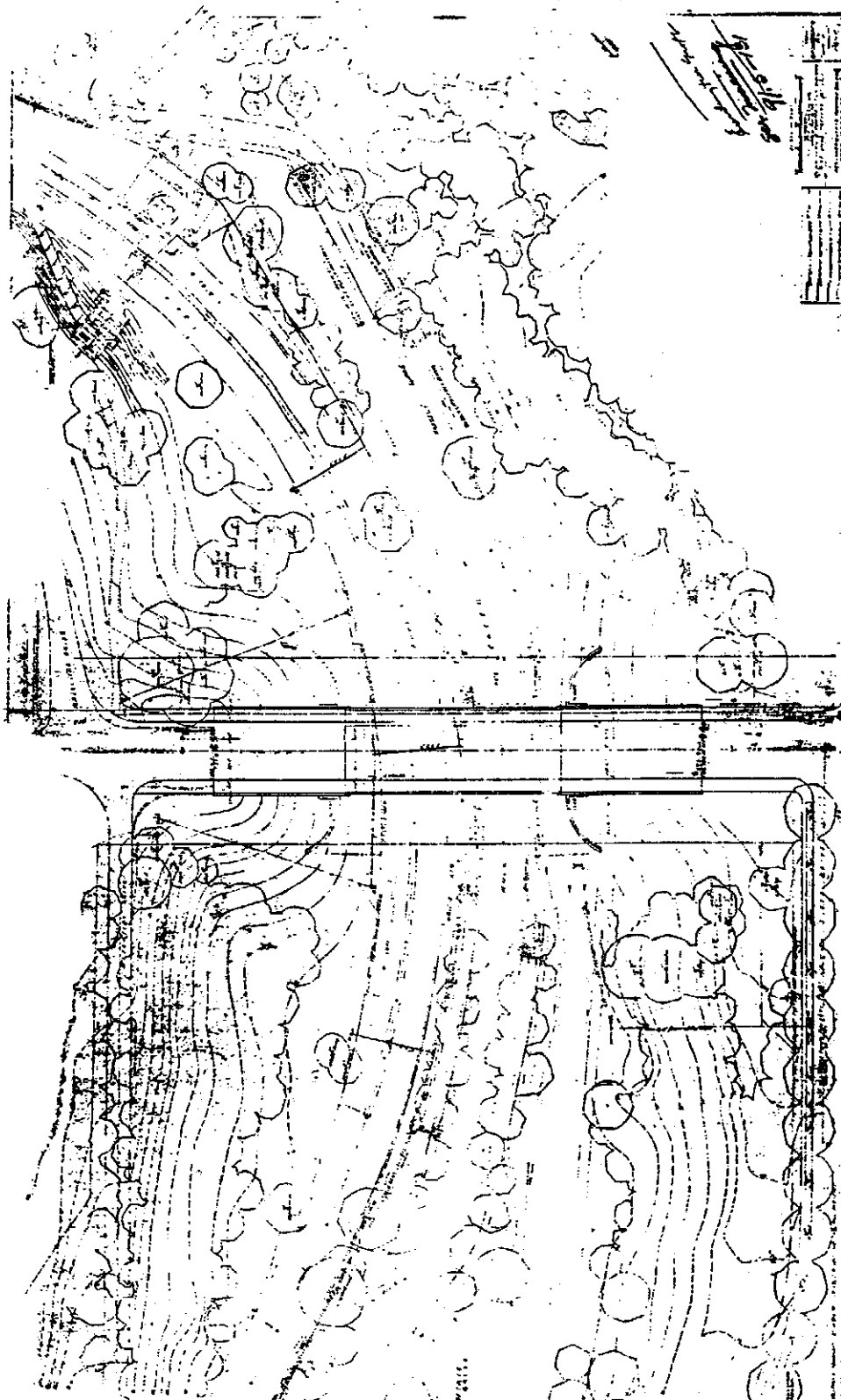
ENGINEER: LOUIS J. JACOBSON
DESIGNER: LOUIS J. JACOBSON
CHECKED: LOUIS J. JACOBSON
DATE: 1914

SCALE: 1" = 100'

LEGEND:
— Bridge Structure
--- Contour Lines
+ Stationing
X Intersection
• Center of Gravity
△ Center of Gravity of Bridge

Massachusetts Avenue Bridge
HAER No. DC-22 (page 11)





Existing tree growth in vicinity of Massachusetts Avenue Bridge, no date. Planning and Construction Division, National Capital Parks (91.5-131).